

CLAIMS

1. An apparatus for playing back an optical disk having a groove, which includes a main information region in which ciphered data information is recorded in the groove, and a 5 subaltern information region for recording disk control information including key information for deciphering the data information, which comprises:

10 a protective condition judging means for judging whether the data information is protected by a copyright or not on the basis of the disk control information when the data information is played back;

15 a disk judging means for judging whether the optical disk is writable or not on the basis of other information than the disk control information when the data information is played back; and

20 a disk playback preventing means for preventing the optical disk from being played back if it is judged that the data information is protected by the copyright by the protective condition judging means and it is judged that the optical disk is writable by the disk judging means.

2. The apparatus for playing back the optical disk according to claim 1, wherein the optical disk is a write-once optical disk.

25 3. The apparatus for playing back the optical disk according to claim 2, wherein the disk playback preventing

means prevents the optical disk from being played back by preventing the data information from being deciphered.

4. The apparatus for playing back the optical disk according to ^{to Claim 1} ~~any one of claims 1 to 3~~, wherein the disk judging means detects whether the groove is provided with a wobble or not, and then judges that the optical disk is writable if the wobble is detected.

5. The apparatus for playing back the optical disk according to ^{to Claim 1} ~~any one of claims 1 to 3~~, wherein the disk judging means detects whether the subaltern information region is provided with a sub-groove portion which connects a predetermined portion of the groove to an adjacent portion of the groove or not, and then judges that the optical disk is writable if the sub-groove portion is detected.

15 6. The apparatus for playing back the optical disk according to ^{to Claim 1} ~~any one of claims 1 to 3~~, wherein the disk judging means detects whether another subaltern information region provided on the optical disk, which is different from said subaltern information region, is provided with a code indicating that the optical disk is writable, or not, and then judges that the optical disk is writable if the code is detected.

25 7. The apparatus for playing back the optical disk according to ^{to Claim 1} ~~any one of claims 1 to 3~~, wherein the disk judging means detects at least one of whether the groove is

provided with a wobble or not, whether the subaltern information region is provided with a sub-groove portion which connects a predetermined portion of the groove to an adjacent portion of the groove or not, and whether another 5 subaltern information region provided on the optical disk, which is different from said subaltern information region, is provided with a code indicating that the optical disk is writable, or not, and then judges that the optical disk is writable if at least one of the wobble, sub-groove portion 10 and the code is detected.

8. An apparatus for copying ciphered data information recorded in a first optical disk to a second optical disk of writable type, the first optical disk having a main information region for recording the ciphered data 15 information and a subaltern information region for recording disk control information including key information for deciphering the ciphered data information, the apparatus comprising:

a protective condition judging means for judging 20 whether the data information is protected by a copyright or not on the basis of the disk control information when the data information is copied; and

a disk copy preventing means for preventing the data information recorded in the first optical disk from being 25 copied to the second optical disk if it is judged that the

data information is protected by the copyright by the protective condition judging means.

9. The apparatus for copying the optical disk according to claim 8, wherein the second optical disk is a write-once 5 optical disk.

10. The apparatus for copying the optical disk according to claim 8 ~~or 9~~, wherein the disk copy preventing means prevents the data information from being copied by preventing the data information from being deciphered.

11. An optical disk of writable type comprising:

a main information region for recording ciphered data information, the data information being recorded in a recording layer within a groove extending along a spiral track, in such a manner that the data information can be 15 read using light;

a first subaltern information region located at an inner periphery side in comparison with the main information region; and

a second subaltern information region located at an 20 inner periphery side in comparison with the first subaltern information region, wherein

a disk control information recorded in a subaltern information region of a read only optical disk is prevented from being copied to the first subaltern information region, 25 by dividing disk control information including key

information for deciphering the data information into two parts, and recording the parts in the first subaltern information region and the second subaltern information region, respectively.

5 12. The optical disk according to claim 11, wherein the optical disk is a write-once optical disk.

13. The optical disk according to claim 12, wherein the disk control information including the key information for deciphering the data information is recorded in the first subaltern information region, while at least positional information of the first subaltern information region is recorded in the second subaltern information region.

14. The optical disk according to ~~any one of claims 11 to 13~~ ^{to claim 11}, wherein the disk control information in the first subaltern information region and the disk control information in the second subaltern information region are formed by means of different recording methods to each other.

15. The optical disk according to claim 14, wherein the disk control information in the first subaltern information region is formed by means of pre-pits.

16. The optical disk according to claim 14, wherein the disk control information in the second subaltern information region is formed by means of a laser trimming process.

17. An optical disk of writable type comprising:

25 a main information region for recording ciphered data

information, the data information being recorded in a recording layer within a groove extending along a spiral track, in such a manner that the data information can be read using light;

5 a first subaltern information region located at an inner periphery side in comparison with the main information region; and

10 a second subaltern information region located at an inner periphery side in comparison with the first subaltern information region, wherein

15 disk control information recorded in a subaltern information region of a read only optical disk is prevented from being copied to the first subaltern information region or to the main information region, by providing a sub-
groove portion, which connects a predetermined portion of the groove to an adjacent portion of the groove, in the first subaltern information region.

18. The optical disk according to claim 17, wherein the optical disk is a write-once optical disk.

20 19. A method of preventing an illegal use of an optical disk having a groove, which includes a main information region in which ciphered data information is recorded in the groove, and a subaltern information region for recording disk control information including key information for
25 deciphering the data information, which comprises the steps

of:

judging whether the data information is protected by a copyright or not on the basis of the disk control information when the data information is played back;

5 judging whether the optical disk is writable or not on the basis of other information than the disk control information; and

10 preventing the optical disk from being played back if the data information is protected by the copyright and the optical disk is writable.

20. The method of preventing the illegal use of the optical disk according to claim 19, wherein the optical disk is a write-once optical disk.

21. The method of preventing the illegal use of the optical disk according to claim 20, wherein the optical disk is prevented from being played back by preventing the data information from being deciphered.

22. The method of preventing the illegal use of the optical disk according to ^{to Claim 19} ~~any one of claims 19 to 21~~, wherein said other information than the disk control information is such information of whether the groove is provided with a wobble or not, while

it is judged that the optical disk is writable if the wobble is detected.

25 23. The method of preventing the illegal use of the optical

A disk according to ~~any one of claims 19 to 21~~ ^{to Claim 19}, wherein said other information than the disk control information is such information of whether the subaltern information region is provided with a sub-groove portion which connects a 5 predetermined portion of the groove to an adjacent portion of the groove or not, while

it is judged that the optical disk is writable if the sub-groove portion is detected.

24. The method of preventing the illegal use of the optical 10 disk according to ~~any one of claims 19 to 21~~ ^{to Claim 19}, wherein said other information than the disk control information is such information of whether another subaltern information region which is different from said subaltern information region, is provided with a code indicating that the optical disk is 15 writable, or not, while

it is judged that the optical disk is writable if the code is detected.

25. The method of preventing the illegal use of the optical 20 disk according to ~~any one of claims 19 to 21~~ ^{to Claim 19}, wherein said other information than the disk control information is at least one in such information set of whether the groove is provided with a wobble or not, whether the subaltern information region is provided with a sub-groove portion which connects a predetermined portion of the groove to an 25 adjacent portion of the groove or not, and whether another

subaltern information region which is different from said subaltern information region, is provided with a code indicating that the optical disk is writable, or not, while it is judged that the optical disk is writable if at 5 least one of the wobble, the sub-groove and the code is detected.

26. A method of preventing an illegal use of optical disks when ciphered data information recorded in a first optical disk is copied to a second optical disk of writable type, 10 the first optical disk having a main information region for recording the ciphered data information and a subaltern information region for recording disk control information including key information for deciphering the ciphered data information, the method comprising the steps of:

15 judging whether the data information is protected by a copyright or not on the basis of the disk control information; and

20 preventing the data information recorded in the first optical disk from being copied to the optical disk of writable type if the data information is protected by the 25 copyright.

27. A method of preventing an illegal use of an optical disk of writable type having a main information region for recording ciphered data information which is recorded in a recording layer within a groove extending along a spiral 25

track in such a manner that the data information can be read using light, a first subaltern information region located at an inner periphery side in comparison with the main information region, and a second subaltern information 5 region located at an inner periphery side in comparison with the first subaltern information region, the method comprising the step of:

10 preventing disk control information recorded in a subaltern information region of a read only optical disk from being copied to the first subaltern information region 15 of the optical disk of writable type, by previously forming the disk control information of the first subaltern information region by means of pre-pits.

28. A method of preventing an illegal use of an optical 15 disk of writable type having a main information region for recording ciphered data information which is recorded in a recording layer within a groove extending along a spiral track in such a manner that the data information can be read using light, a first subaltern information region 20 located at an inner periphery side in comparison with the main information region, and a second subaltern information region located at an inner periphery side in comparison with the first subaltern information region, the method comprising the step of:

25 preventing disk control information recorded in a

subaltern information region of a read only optical disk from being copied to the first subaltern information region of the optical disk of writable type, by providing a sub-groove, which connects a predetermined portion of the 5 groove to an adjacent portion of the groove, in the first subaltern information region.

29. The method of preventing the illegal use of the optical disk according to ~~any one of claims 26 to 28~~ ^{to claim 26}, wherein the optical disk is a write-once optical disk.

10 30. A method of preventing an illegal use of an optical disk of writable type having a main information region for recording ciphered data information which is recorded in a recording layer within a groove extending along a spiral track in such a manner that the data information can be 15 read using light, a first subaltern information region located at an inner periphery side in comparison with the main information region, and a second subaltern information region located at an inner periphery side in comparison with the first subaltern information region, the method 20 comprising the steps of:

preventing disk control information recorded in a subaltern information region of a read only optical disk from being copied to the first subaltern information region of the optical disk of writable type, by previously forming 25 the disk control information of the first subaltern

information region by means of pre-pits;

judging whether the data information recorded in the optical disk of writable type is protected by a copyright or not on the basis of the disk control information recorded in the first subaltern information region when the data information is played back; and

preventing the optical disk from being played back if the data information is protected by the copyright.

31. A method of preventing an illegal use of an optical disk of writable type having a main information region for recording ciphered data information which is recorded in a recording layer within a groove extending along a spiral track in such a manner that the data information can be read using light, a first subaltern information region located at an inner periphery side in comparison with the main information region, and a second subaltern information region located at an inner periphery side in comparison with the first subaltern information region, the method comprising the steps of:

20 preventing disk control information recorded in a subaltern information region of a read only optical disk from being copied to the first subaltern information region of the optical disk of writable type, by providing a sub-groove, which connects a predetermined portion of the groove to an adjacent portion of the groove, in the first

subaltern information region;

judging whether the data information recorded in the optical disk of writable type is protected by a copyright or not on the basis of the disk control information recorded in the first subaltern information region when the data information is played back; and

preventing the optical disk from being played back if the data information is protected by the copyright.

32. The method of preventing the illegal use of the optical disk according to claim 30 ~~or 31~~, wherein the optical disk is a write-once optical disk.

33. The method of preventing the illegal use of the optical disk according to claim 32, wherein the optical disk is prevented from being played back by preventing the data information from being deciphered.

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